TeleType Mini-Bluetooth GPS Receiver User Manual

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TeleType Mini-Bluetooth GPS Receiver

User Manual

by TeleType Co.

TeleType GPS Mini-Bluetooth GPS Receiver

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1 Teletype GPS Bluetooth GPS

Congratulations on your purchase of the TeleType GPS Mini-Bluetooth GPS receiver with built-in LiON rechargeable batteries. Before you begin, make sure that your package includes the following items. If any of these items are missing, please contact sales@teletype.com.

- TeleType GPS Mini-Bluetooth GPS receiver
- Car Power Adapter
- A/C Power Adapter

2 Overview

The **TeleType GPS Mini-Bluetooth GPS receiver with built-in LiON rechargeable batteries** (**Product #2951**) pictured above is a total solution GPS receiver with Bluetooth, a UART interface and a built-in rechargeable battery for high sensitivity to tracking signal. Its design is based on the SiRF Star IIe/LP low power architecture and it is a dual-function GPS receiver. The receiver transmits satellite information through a Pocket PC or a notebook with Bluetooth interfaces. Also, when transmitting information through a data cable, this G-Mouse GPS receiver is able to deliver satellite signals to the device without the Bluetooth interface.

This positioning device is useful for many operations such as car navigation, mapping, surveying, security, agriculture and so on; only a clear view of the sky and a power supply are necessary for the unit to function. This receiver is able to contact other devices through the Bluetooth interface or by USB. It also has a built-in rechargeable battery to save satellite information such as the status of the satellite signal, the most recent location, and the date and time of its last use.

With its low power consumption, the Bluetooth GPS Receiver tracks up to 12 satellites at a time, re-acquires satellite signals in 100 ms and updates position data every second. Trickle-Power allows the unit to operate only a fraction of the time and Push-to-Fix permits the user to have a quick position fix, even though the receiver usually stays off.

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3 Features

The TeleType GPS Mini-Bluetooth GPS receiver with built-in LiON rechargeable batteries has many uses and features. It is well suited for system integration and for users who use Pocket PCs and laptops with a Bluetooth interface.

- Built-in SiRF Star IIe/LP low power consumption chip set
- 12 parallel satellite tracking channels, for fast acquisition and reacquisition
- High-speed signal acquisition using 1,920 time/frequency search channels
- Built-in WAAS/EGNOS Demodulator without any required additional hardware
- Fully compatible with Bluetooth Serial Port Profile (SPP)
- Built-in rechargeable Lithium-ion battery without external power supply
- Two modes to suit the user's preference (Power Saving mode and Continue mode)
- Allows a terminal contact to another system without a Bluetooth device
- Built-in rechargeable battery for memory and RTC backup and for quick Time To First Fix (TTFF)
- Support NMEA0183 v2.2 data protocol and SiRF binary code
- 4-color LED status indicator
- Active antenna connector for getting better satellite reception
- FLASH-based program memory
- Small, sleek, and lightweight design made to fit in your hand
- Enhanced algorithms such as SnapLock and SnapStart provide superior navigation and performance in seasonal, urban and rural environments
- Ideally applied for car navigation, marine navigation, fleet management, AVL, personal navigation, tracking and mapping.

4 Technical Specification

4.1 Basic Specification

Basic Specification:

- Chip set: SiRF Star IIe/LP
- Channels: 12 parallel satellite-tracking channels
- Frequency: 1575.42 MHz
- Receiver: L1, C/A code

4.2 Acquistion Time (Averaged)

Acquisition Time (Averaged):

- Reacquisition: 0.1 seconds
- Snap start: < 3 seconds (at < 25 minutes off period)
- Cold start: < 45 seconds
- Warm start: < 38 seconds
- Hot start: < 8 seconds
- Update rate: 1 second continuously

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4.3 Receiver Accuracy

Receiver Accuracy:

- Normal: 5 - 25 meters (16 - 82 feet) CEP without SA
- Enable EGNOS or WAAS:
  Position: < 2.2 meters (7.2 feet), horizontal 95% of time
  < 5 meters (16 feet), vertical 95% of time
- Velocity: within 0.1 meters / second
- Time: 1 microsecond synchronized GPS time

4.4 Limitations

Limitations:

- Altitude: < 18,000 meters (60,000 feet)
- Velocity: < 515 meters (1,690 feet) / second (700 Knots)
- Acceleration: 4 G
- Jerk: 20 meters (66 feet) / second

4.5 Power Supply

Power Supply:

- External Voltage: 5 VDC +/- 10%
- Batteries:
  - Main Power: Built-in rechargeable Lithium-ion battery for system power
  - Backup Power: Rechargeable Lithium-ion battery for memory & RTC backup
- Working voltage:
  - Normal Mode: 80-90 mA
  - Power Saving Mode: 30 mA
- Working period (assuming full battery):
  - Continue Mode: 9 hours
  - Power Saving Mode: 16 hours

4.6 Output & Interface

Output and Interface:

Output:

1) Output protocol
- Baud Rate: 9600 bps
- Data bit: 8
- Parity: No
- Stop bit: 1

2) Format: NMEA0183 V2.2 *(Optional GLL, VTG or SiRF binary format)*
- GPGGA (1 time per second)
- GPGSA (1 time per second)
- GPGSV (1 time per 5 seconds)

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- GPRMC (1 time per second)

3) Datum: WGS84

Input/ Output Interface:

- Compatible Bluetooth Serial Port Profile (SPP): v1.1 and class 2 (maximum 10 meter range)

External Antenna Interface:

- 3.0V input MCX-type active antenna connector

4.7 Physical Specification

Physical Specification:

- Size: 72 mm x 55 mm x 21 mm
- Weight: < 75 grams (2.7 ounces)
- Operating Temperature: -10° C to + 60° C (14° F to +140° F)
- Storage Temperature: -20° C to + 85° C (-4° F to +185° F)
- Operating humidity: 5% to 95%; No condensing

4.8 Other Functions

Other Functions:

- Bluetooth frequency: 2.4 ~ 2.48 GHz
- Bluetooth Input Sensitivity: -80 dbm
- Low sensitivity of receiving satellite signal: -175 dBW
- LED Functions: Indicate Bluetooth status, GPS status, Battery Status and Battery charging status

5 GPS Signal Reception

The TeleType GPS Bluetooth GPS receiver offers high position accuracy and fast Time-To-First-Fix (TTFF). These rely on environmental factors, such as where the receiver is located and the initial state of the receiver. While attempting a position fix, the receiver needs to be locked-on to at least four satellites. The TeleType GPS Bluetooth GPS Receiver then uses the signals received from the satellites, along with data from the receiver's digital memory about the last position fix, in order to compute the current location of the device.

Environmental factors that influence position accuracy and initial GPS position fix are:

- Tall buildings
- Narrow street and passageway
- Protection film on glass
- Heavy foliage
- Large cliffs
- Other obstructions where the satellite signals may blocked

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- Poor satellite geometry situations

The initial state of the receiver refers to the last status of the receiver in memory. This mainly determines the length of time it will take for your GPS receiver to obtain a position fix. Your position can be quickly fixed within 8 seconds from a "hot-start" state, and typically 45 seconds from a "cold-start" state. It takes at least 3 to 5 minutes to obtain a position fix from a completely restart-state, for example, flying at a distance over 300 miles from the initial origin.

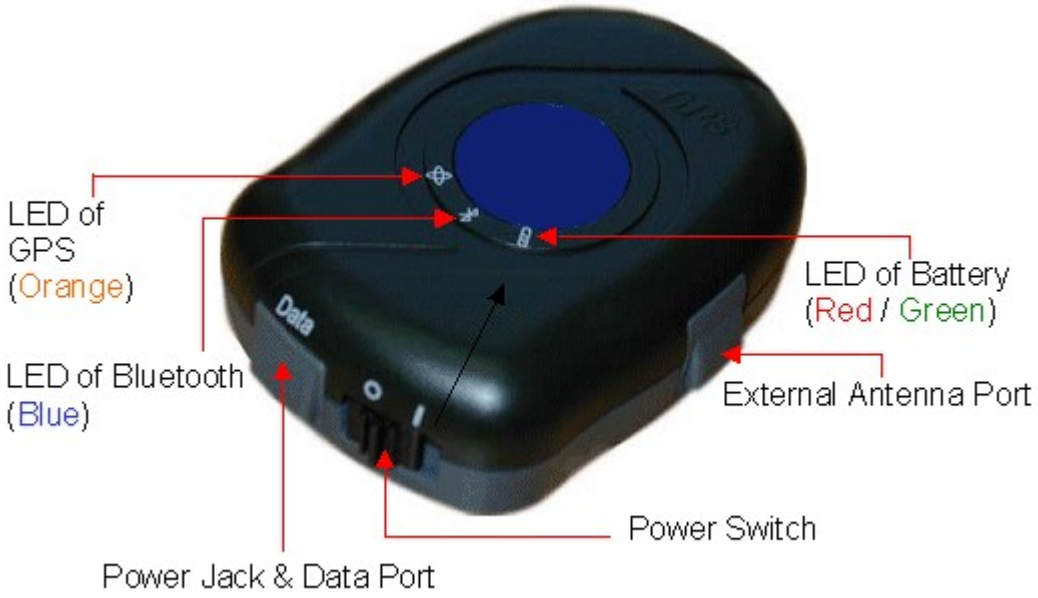
The TeleType GPS Bluetooth GPS Receiver uses the satellite signals to calculate your exact location by computing your distance from the satellites. The position data within the receiver is then converted into latitude and longitude coordinates, which are usually provided in the geodetic datum on which the GPS is based (WGS84). Using the wrong datum can result in position offsets for many miles.

In addition to incorrect datum, there are a number of positioning errors that can occur which affect the accuracy of your TeleType GPS Bluetooth GPS Receiver. The major errors including satellite orbiting errors, poor satellite geometry, multi-path signals, atmospheric delay, and receiver clock timing.

6 Hardware Description

6.1 Device Description

Device Description:



*Your actual TeleType GPS Mini-Bluetooth GPS receiver may look different from the one pictured above, but the functions and buttons are the same.

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6.2 LED Status

LED Status:

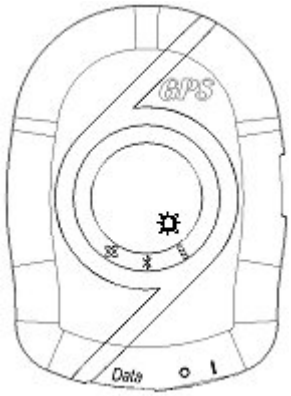
SYMBOL	COLOR	STATUS	DESCRIPTION
Bluetooth	Blue	Blinking	3 times / second: searching Bluetooth device 1 time / 3 seconds: standby mode 1 time / second: transferring data
Battery	Red Green None	Light On: Light On: Light Off:	Low Battery Charging Charged or not charging
Power	Orange	Light On: Blinking:	Acquiring satellites Position fixed

6.3 Power Switch

Power Switch: I = On0 = Off

7 Understanding Your Receiver

7.1 Charging Your Battery



Charging the Battery:

Take the power cable and connect it to the power socket. This will begin to charge the battery.

For the first use, please charge battery until it is full (the LED turns off).

The LED that represents the battery is the right-most battery icon (shown in the first picture).

If the LED is red, that means that the power is too low.
If the LED is green, that means that the power is charging.
If the LED is off, that means that the battery is either full or not charging.

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7.2 Turning The Power On

Turn The Power On:

The LED that represents the Bluetooth connection is the middle Bluetooth logo icon (shown in second picture). The LED that represents the power is the left-most power icon (shown in the third picture).

Switch the power of the TeleType GPS BlueTooth GPS receiver on. Make sure that the receiver is in clear view of the sky without any obstruction for better satellite acquiring. Your receiver will search for a connection to a Bluetooth device. While searching, the LED will blink once every three seconds. If the Bluetooth receiver does not detect any devices, it will turn off in five minutes.

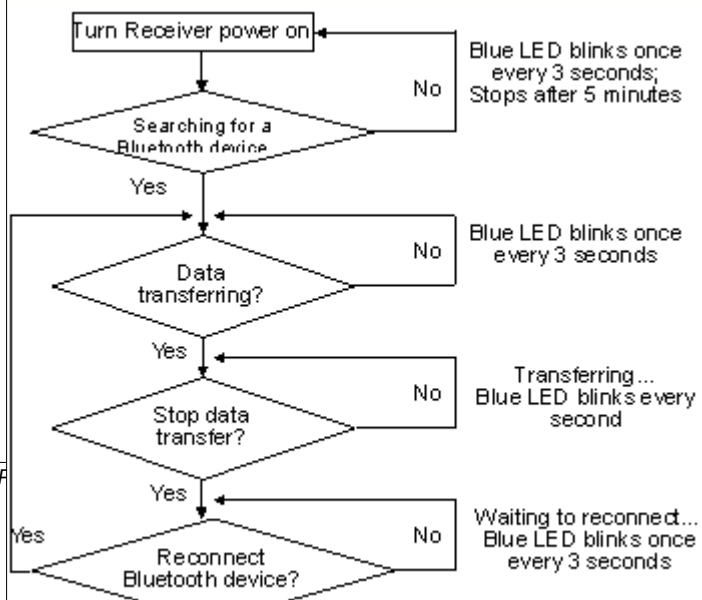
When the receiver detects a device, it will see if data transfers from the receiver to the device and the LED will blink every second. It will blink once every three seconds in the case that it is no longer transferring data, or cannot transfer data and is trying to reconnect to the device. This is described below in the status chart of the receiver.

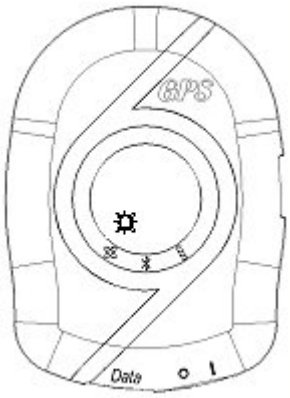
The third LED (orange), the power indicator, will glow without blinking while the receiver fixes its position. Once a position has been fixed, the orange LED will be blinking as well.

Note:
Some PDAs have to re-open Bluetooth manager for the Bluetooth device to reconnect.

7.3 Receiver Status Chart

Receiver Status Chart:





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8 Connection

Connecting Your Bluetooth Device:

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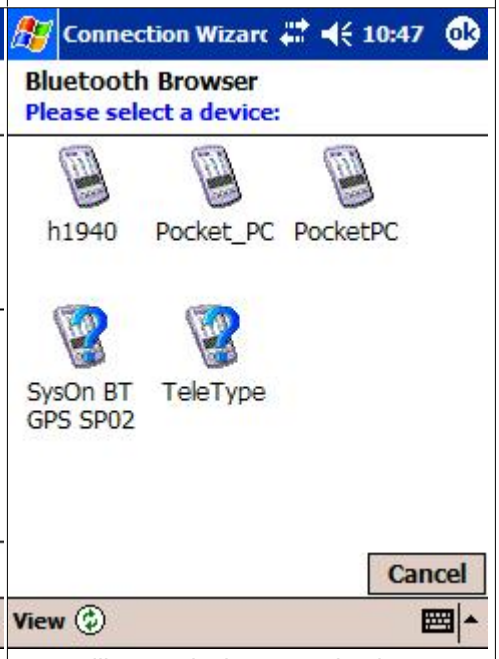
Begin by selecting ***Start*** *->* ***Bluetooth Manager*** *. Once in the program, select* ***New*** *->* ***Connect!***

Connection Wizarc 10:46
Bluetooth
Connection Wizard
Explore a Bluetooth device
Discover the services another device offers and create connection shortcuts for them.
Connect to the Internet
Access the Internet using a network access point, a cell phone or another connected Bluetooth device.
Join a personal network
Connect two or more Bluetooth devices to share files, collaborate or play multiplayer games.
Partner with a cell phone
Cancel
Next

Select ***Explore A Bluetooth device*** *to see what Bluetooth device you currently have selected.*

Connection Wizarc 10:46
Bluetooth Connection Wizard
Explore a Bluetooth device
Device:
<No device selected>
Tap here to choose a device
How to use this screen
To select a device, tap inside the device selection box above. After the list appears, choose a device.
Tap 'Next' to continue or 'Back' to return to the previous screen. To exit without completing the connection, tap 'Cancel'.
Cancel
Back
Next

You will see the above screen, showing that you do not have a Bluetooth device selected. Click on ***Next****.*



You will see a device named TeleType. Please click on this device. It will select this device as your Bluetooth Browser.

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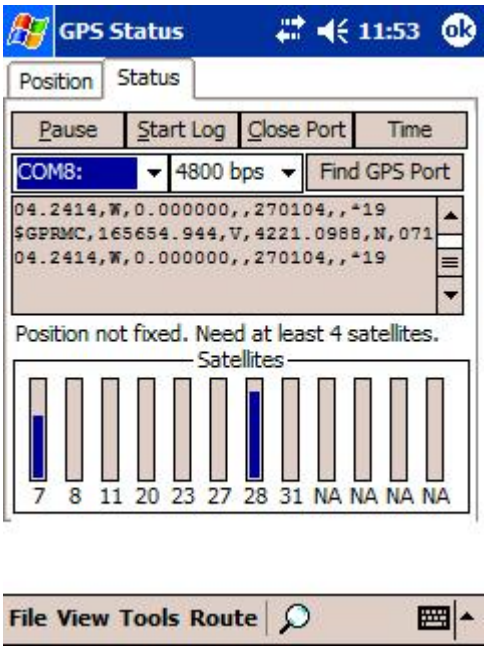
Verifying Your Connection:



Once you have completed the setup of your Bluetooth device, you may check to see if your TeleType GPS software is attempting to fix your position. You can do this by opening your GPS software, and selecting **Tools** -> **GPS Status**. Go to the **Status** tab, and click on **Find GPS Port**. Shortly, you will see the GPS code running as in the picture above. This signifies that your Bluetooth device is functioning properly.

9 Frequently Asked Questions

Q: My Bluetooth host device is asking me for a passkey. What is it?

A: It is "6268".

Q: The TeleType software doesn't seem to be making any connections with my Bluetooth GPS receiver. How do I make it work?

A: You will need to make sure your PDA is paired with the Bluetooth device. Follow the instructions in the Connection section to make sure that your PDA is recognizing the Bluetooth GPS receiver properly. If so, you will need to connect with the device by going to the Bluetooth Manager and double-tapping on the TeleType icon.

Q: My Bluetooth receiver seems to be connecting to satellites, but I am unable to establish a connection between the receiver and my PDA. How can I make a connection?

A: Go to the Bluetooth Manager on your PDA. Locate the "TeleType: SPP Slave" icon and tap and hold. A pop-up menu will appear, select Delete.

Next, locate the Reset button on your Bluetooth GPS receiver and press it. Then perform a soft reset on your PDA.

Once your PDA has finished resetting itself, go back to the Bluetooth Manager screen and perform the

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typical setup and connection procedures for your Bluetooth receiver (for help with connection, please review the Connection section).

Finally, run the TeleType GPS software. Go to Tools > GPS Status > Status, select COM 8 as your port, 4800bps, and tap Open Port. You should see symbols scrolling in the gray box below.

10 Care and Maintenance

Your TeleType Bluetooth GPS Receiver should be treated with care and properly maintained to ensure the best performance. Keep in mind these helpful tips when using your receiver:

- Keep this and all accessories out of small children's reach.
- Keep your Bluetooth GPS receiver dry. Do not expose to rain, water, or high humidity environments. Humidity, liquids, and precipitation contain minerals that will corrode its connectors, jacks, plugs, and electronic circuit boards.
- Use only the supplied and approved accessories. Unauthorized accessories, antenna, modifications or attachments could damage the Bluetooth GPS receiver, and may violate regulations governing radio devices.
- Use a dry, clean soft cloth to clean the unit. Do not use harsh cleaning solvents, chemicals, or strong detergents.
- Do not drop, shake, or knock the Bluetooth GPS receiver. Rough handling can break the connector, jack, and internal electronic circuit boards. This will cause non-recoverable damages to the product.
- Do not store the Bluetooth GPS receiver in dusty, dirty areas. Its moving parts, like connector pins and clips, can be damaged.
- Do not store the Bluetooth GPS receiver in hot area. High temperatures can shorten the life of electronic devices, and melt or drape certain plastics.
- Do not expose your TeleType Bluetooth GPS Receiver to temperatures higher than 185°F (85°C). Do not leave your Bluetooth GPS receiver in your car under direct sunlight while not in use.
- Do not store the Bluetooth GPS receiver in cold temperatures. When the unit warms up to its normal operational temperature, moisture can aggregate inside it, severely damaging the electronic circuit boards inside.
- Do not attempt to open the Bluetooth GPS receiver. Unauthorized handling may damage the unit, and void your warranty.
- Do not paint on the Bluetooth GPS receiver. Paint can clog the connector, jack, and prevent proper normal operation of the unit.

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